

**General Certificate of Secondary
Education**

Design and Technology:

Innovator Suite

Food Technology

Unit A524: Technical aspects of
designing and making

Specimen Paper

A524

Time: 1 hour 15 minutes

Candidates answer on question paper:



Candidate
Forename

Candidate
Surname

Centre
Number

--	--	--	--	--

Candidate
Number

--	--	--	--

INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- You have 2 minutes to read through this question paper.
- Answer **all** the questions.
- You may answer the parts of each question in any order you wish, **writing legibly** with a pencil or pen
- Do not write in the bar codes.
- Do not write outside the box bordering each page.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

- The number of marks for each question is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **60**.

FOR EXAMINER'S USE

1	
2	
3	
4	
5	
TOTAL	

This document consists of **10** printed pages and **2** blank pages.

[Turn over

Section A

Answer **all** questions.

1 Fig. 1 shows a food preparation area.

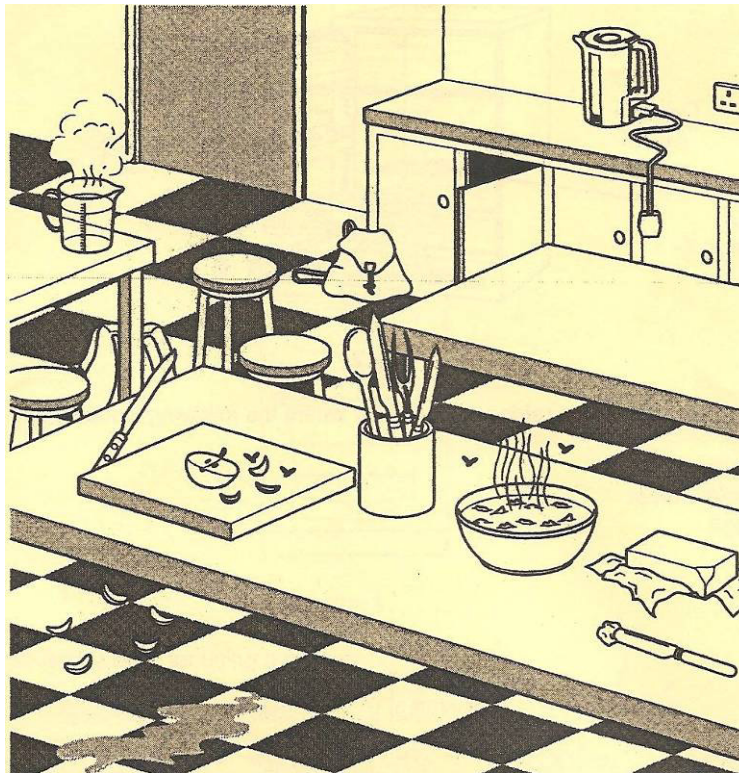


Fig 1

(a) State **two** food hygiene hazards shown in Fig.1.

(i) [1]

(ii) [1]

(b) Bacteria will grow very easily on some foods.

(i) State the name of **one** high risk food.

..... [1]

(ii) Give the name of the bacteria that can cause food poisoning.

..... [1]

(c) On the chart below **tick** the temperature which bacteria grow in quickly.

Temperature range	
0 - 5°C	
8 - 63°C	
75 - 100°C	

[1]

(d) State why freezing will prevent bacteria from growing.

..... [1]

- (e) Explain why some foods are not suitable for freezing.

.....
.....
..... [2]

- (f) Discuss why there has been an increase in the number of reported cases of food poisoning.

.....
.....
.....
.....
.....
.....
.....
..... [4]

Total [12]

SPECIMEN

2 Fig. 2 shows a star diagram for a savoury wholemeal pizza product.

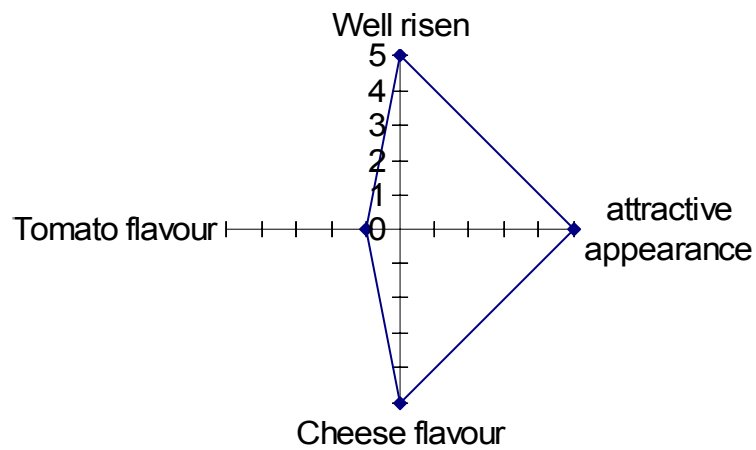


Fig. 2

- (a) State the area of the product which needs improving.
 [1]
- (b) State the function of the following ingredients used in bread making.
 (i) Yeast [1]
 (ii) Strong flour [1]
- (c) State **two** conditions necessary for yeast to function correctly.
 [1]
 [1]
- (d) State **one** function of fibre in the diet.

 [1]

- (e) Sensory analysis is an ongoing activity during the design and making process for any new product.

Explain the difference between a rating and a ranking test.

.....

.....

.....

..... [2]

- (f) Write clear instructions on how to set up and carry out a sensory analysis test.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

Total [12]

3 Fig 3 shows three symbols shown on food packaging.

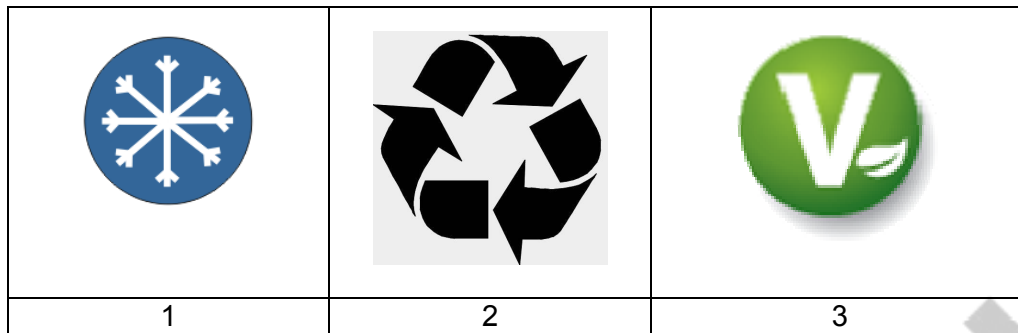


Fig.3

(a) Fig. 3 shows different symbols put on food packaging. Tick (✓) which symbol would be put on a vegetarian product. [1]

(b) A Food Manufacturer is producing some vegetarian cheese pasties.

The ingredients used in the pastry are:-

- Plain Flour
- Margarine
- Lard
- Water
- Salt

(i) State the ingredient in the pastry that is unsuitable for vegetarians.

..... [1]

(ii) As part of the vegetarian range the manufacturer wants to include a different pasty filling to cheese.

State the name of **one** alternative protein food that could be used in the pasties to replace the cheese.

..... [1]

(c) Give **one** function of protein in the diet.

..... [1]

(d) The pasties are an example of a cooked chilled food product.

Explain **one** reason why consumers choose to buy cook/chill products.

.....

.....

..... [2]

- (e) Describe the cook-chill process.

.....
 [2]

- (f) Explain **two** reasons why a person chooses to become a vegetarian.

(i)

 [2]

(ii)

 [2]

Total [12]

Section B Answer all questions

- 4 We are all being encouraged to eat more fruit and vegetables.



Fig. 3

- (a) Fig.3 shows some pictures of different types of vegetables.

Name the vegetable in Fig. 3 which is a good source of vitamin C.

..... [1]

- (b) State **one** function of vitamin C in the diet.

..... [1]

- (c) Vitamin C is easily destroyed when preparing and cooking vegetables.

State **two** ways this can be reduced.

(i) [1]

(ii) [1]

(d) State **two** dangers to health of having a high fat diet.

..... [1]

..... [1]

(e) Explain **two** ways of reducing the fat content of a product.

(f) The following are examples of recent newspaper headlines.

Ready meals that
come with added
health risk

Ready meals eaten by millions are
loaded with fat and salt it is
claimed

Revealed, foods with
dangerous amounts of
salt

One in three adults will be
dangerously overweight within
10 years unless we change our
lifestyles now, warn top doctors

Explain what effect publicity has on manufacturers of ready made meals.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

Total [12]

5 Food manufacturers carry out research so they can generate new ideas.

(a) State **one** research method a manufacturer may use when generating new ideas.

..... [1]

(b) State **one** way the results of research could be recorded.

..... [1]

(c) Young children often refuse to eat fruit.

A food manufacturer wants to develop a new fruit dessert which will appeal to children.

The design specification for the fruit dessert product is:

- To contain fruits
- To contain calcium
- To contain a variety of textures
- To be attractive to children

On the diagram below draw and label a new fruit dessert product.
In the boxes provided describe your ideas for each point.

To contain fruits	To contain calcium

To contain a variety of textures	To be attractive to children

[4]

- (d)** Additives are widely used in food products.

Discuss the implications to the manufacturer and consumer of using additives in food products.

[6]

Total [12]

Paper Total [60]

[BLANK PAGE]

SPECIMEN

[BLANK PAGE]

SPECIMEN

The maximum mark for this paper is 60.

SPECIMEN

Section A		
Question Number	Answer	Max Mark
1(a)	<p>Fig. 1 shows a food preparation area. State <u>two</u> food hygiene hazards shown in Fig.1.</p> <p>2 x 1 mark</p> <p>Food uncovered Flies near food Food / liquid on the floor</p>	[2]
1(b)	<p>Bacteria will grow very easily on some foods.</p>	
1(b)(i)	<p>State the name of <u>one</u> high risk food.</p> <p>Meat Fish Eggs Milk Cheese Ready prepared foods Cream Gravy</p>	[1]
1(b)(ii)	<p>Give the name of the bacteria that can cause food poisoning.</p> <p>Pathogenic bacteria</p>	[1]
1(c)	<p>On the chart below <u>tick</u> the temperature which bacteria grow in quickly.</p> <p>8 - 63°C</p>	[1]
1(d)	<p>State why freezing will prevent bacteria from growing.</p> <p>Temperature is too low for bacteria to multiply</p>	[1]

Section A																										
Question Number	Answer	Max Mark																								
1(e)	<p>Explain why some foods are not suitable for freezing.</p> <p>1 Mark for statement 1 Mark for explanation of the statement. Foods with a high water content are not suitable. The water freezes into crystals which burst the cell walls. When it thaws the cells collapse e.g. cucumber/lettuce etc.</p>	[2]																								
1(f)	<p>Discuss why there has been an increase in the number of reported cases of food poisoning.</p> <p>4 x1marks 2 x 1 mark for a statements Maximum 2 x 1 mark marks developing the statement Maximum 1 mark for a relevant example this must be clearly linked to the statement or explanation</p> <table border="1"> <thead> <tr> <th>Statement</th><th>explanation</th><th>Relevant example</th></tr> </thead> <tbody> <tr> <td>Incorrect storage of food products</td><td>Reference to the conditions which bacteria require to grow</td><td>Naming of relevant high risk foods or examples of cross contamination</td></tr> <tr> <td>Correct hygiene procedures not being followed by those preparing foods</td><td>Reference to personal hygiene rules</td><td>Example of rules which could be broken</td></tr> <tr> <td rowspan="4">Poor preparation of foods</td><td>Links to transferring of bacteria from raw to cooked foods</td><td>Relevant examples of food given</td></tr> <tr> <td>Foods prepared to far in advance of serving</td><td>e.g. for a buffet</td></tr> <tr> <td>In correct reheating of foods / not cooking foods for the correct amount of time to the correct temperatures</td><td>Not to above 75C for 2 mins???</td></tr> <tr> <td>Not keeping hot foods hot and using within the correct amount of time</td><td>Above 63C</td></tr> <tr> <td>Not following date marking</td><td>Particularly important use by date on high risk foods</td><td>Example of high risk food</td></tr> <tr> <td>Choice of ingredients - raw eggs, un-pasteurised cheese</td><td>Links to Lysteria</td><td></td></tr> </tbody> </table>	Statement	explanation	Relevant example	Incorrect storage of food products	Reference to the conditions which bacteria require to grow	Naming of relevant high risk foods or examples of cross contamination	Correct hygiene procedures not being followed by those preparing foods	Reference to personal hygiene rules	Example of rules which could be broken	Poor preparation of foods	Links to transferring of bacteria from raw to cooked foods	Relevant examples of food given	Foods prepared to far in advance of serving	e.g. for a buffet	In correct reheating of foods / not cooking foods for the correct amount of time to the correct temperatures	Not to above 75C for 2 mins???	Not keeping hot foods hot and using within the correct amount of time	Above 63C	Not following date marking	Particularly important use by date on high risk foods	Example of high risk food	Choice of ingredients - raw eggs, un-pasteurised cheese	Links to Lysteria		[4]
Statement	explanation	Relevant example																								
Incorrect storage of food products	Reference to the conditions which bacteria require to grow	Naming of relevant high risk foods or examples of cross contamination																								
Correct hygiene procedures not being followed by those preparing foods	Reference to personal hygiene rules	Example of rules which could be broken																								
Poor preparation of foods	Links to transferring of bacteria from raw to cooked foods	Relevant examples of food given																								
	Foods prepared to far in advance of serving	e.g. for a buffet																								
	In correct reheating of foods / not cooking foods for the correct amount of time to the correct temperatures	Not to above 75C for 2 mins???																								
	Not keeping hot foods hot and using within the correct amount of time	Above 63C																								
Not following date marking	Particularly important use by date on high risk foods	Example of high risk food																								
Choice of ingredients - raw eggs, un-pasteurised cheese	Links to Lysteria																									

Section A		
Question Number	Answer	Max Mark
2(a)	<p>Fig. 2 shows a star diagram for a savoury wholemeal pizza product. State the area of the product which needs improving.</p> <p>Tomato flavour</p>	[1]
2(b)(i)	<p>State the function of the following ingredients used in bread making.</p> <p>Yeast</p> <p>Raising agent Makes the bread rise Flavour To provide carbon dioxide</p>	[1]
2(b)(ii)	<p>Strong flour</p> <p>Provides the bulk Provides gluten – hold bread in risen shape</p>	[1]
2(c)	<p>State <u>two</u> conditions necessary for yeast to function correctly.</p> <p>2 x 1 marks moisture/water food supply warmth</p>	[2]
2(d)	<p>State <u>one</u> function of fibre in the diet.</p> <p>Helps to prevent:</p> <ul style="list-style-type: none"> • constipation • bowel disease e.g. diverticulitis • bowel cancer <p>Healthy digestive system Helps food move through the digestive system.</p>	[1]
2(e)	<p>Sensory analysis is an ongoing activity during the design and making process for any new product.</p> <p>Explain the difference between a rating and a ranking test.</p> <p>Rating test</p> <ul style="list-style-type: none"> • this involves giving food products a score • Usually you give scores out of 5 • It can involve giving a score for a final product or different aspects of the product <p>Ranking test</p> <ul style="list-style-type: none"> • putting the products in order of preference / which they liked the most 	[2]

Section A		
Question Number	Answer	Max Mark
2(f)	<p>Write clear instructions on how to set up and carry out a sensory analysis test.</p> <p>1 x 4 marks. To gain full marks they need to have 4 points.</p> <p>Employ trained tasters Prepare the charts which must be clear and easy to understand Check the tasting booths are set up correctly. Put each product on the same type of plate / colour / size. Label each product with a symbol. Provide each taster with a glass of water. Sit tasters in individual booths Give out samples one at a time Ensure tasters have a drink of water between samples Record results between samples if doing a rating test Record results after completing tasting all three products if doing a ranking test. Use infra red lighting No windows in booths for tasters to confer</p>	[4]
3(a)	<p>Fig 3 shows three symbols shown on food packaging.</p> <p>Fig. 3 shows different symbols put on food packaging. Tick (✓) which symbol would be put on a vegetarian product.</p> <p>Symbol 3</p>	[1]
3(b)(i)	<p>A Food Manufacturer is producing some vegetarian cheese pasties.</p> <p>The ingredients used in the pastry are:-</p> <p>Plain Flour Margarine Lard Water Salt</p> <p>State the ingredient in the pastry that is unsuitable for vegetarians.</p> <p>Lard</p>	[1]
3(b)(ii)	<p>As part of the vegetarian range the manufacturer wants to include a different pasty filling to cheese.</p> <p>State the name of <u>one</u> alternative protein food that could be used in the pasties to replace the cheese.</p> <p>Quorn Soya Tofu</p>	[1]

Section A		
Question Number	Answer	Max Mark
3(c)	<p>Give <u>one</u> function of protein in the diet.</p> <p>Growth / body building Repair Maintenance Secondary source of energy</p>	[1]
3(d)	<p>The pasties are an example of a cooked chilled food product. Explain <u>one</u> reason why consumers choose to buy cook/chill products.</p> <p>1 mark for statement 1 mark for explanation of the statement</p> <p>Cooks more quickly than a frozen product because it does not have to thaw. Quicker to prepare than using fresh ingredients as no peeling/chopping etc. Quicker to prepare and cook than using frozen food product. Wide range available. Economy range/luxury range/special diet ranges. Some can be ready to eat on the go, suitable for packed lunches, picnics, travel.</p>	[2]
3(e)	<p>Describe the cook-chill process.</p> <p>1 mark for statement 1 mark for explanation of the statement</p> <p>Example of answer Many people do not have enough time (1 mark) so these meals can often be cooked in a matter of minutes (1 mark)</p> <ul style="list-style-type: none"> • Saves time – can be reheated / cooked in minutes • Wide variety of products available – reference to dishes from other countries / suitable for special diets e.g. healthy options, low fat, vegetarian. • Can buy high quality luxury products. • May not have the skills to make the product – but can still eat a balanced diet if choosing the product carefully. • Can cost less – than buying all the separate ingredient. 	[2]

Section A		
Question Number	Answer	Max Mark
3(f)	<p>Explain <u>two</u> reasons why a person chooses to become a vegetarian.</p> <p>4 x 1 mark 2 x 1 mark for statement 2 x 1 mark for explanation of the statement</p> <p>Example of two marks For health reasons (1 mark), vegetarian diets are often higher in fibre which helps to prevent digestive problems (1 mark)</p> <ul style="list-style-type: none"> • Religion – may give specific example • Objection to the slaughter of animals – considered to be cruel. • Health Scares – such as BSE • Economically wasteful – the cost to rear animals is expensive which could produce far more food if it was used for cereals. • Dietary reasons – may give an example e.g. vegetarian diet is usually lower in fat / higher in fibre • Reference to health - in come studies, vegetarians have been shown to be more 'healthy' than meat-eaters, they suffer less from diseases such as heart disease, some cancers, hypertension and Type 2 diabetes, and to live longer. – credit any of these reasons • Don't like meat – reference to the taste, texture, mouth feel 	[4]

Section B		
Question Number	Answer	Max Mark
4(a)	<p>We are all being encouraged to eat more fruit and vegetables. Fig.3 shows some pictures of different types of vegetables. Name the vegetable in Fig. 3 which is a good source of vitamin C. Green pepper</p>	[1]
4(b)	<p>State <u>one</u> function of vitamin C in the diet.</p> <p>Helps absorb calcium from food Helps absorb iron from food Protection against infection</p>	[1]
4(c)	<p>Vitamin C is easily destroyed when preparing and cooking vegetables. State <u>two</u> ways this can be reduced.</p> <p>Cook in minimum amount of water Steam / microwave vegetables Lid on pan Use liquid vegetables have been cooked in for gravy Do not over cook – serve crisp</p>	[2]
4(d)	<p>State <u>two</u> dangers to health of having a high fat diet.</p> <p>2 x 1 mark</p> <p>Obesity Heart disease Type 2 diabetes Breathing problems High blood pressure Coronary heart disease</p>	[2]
4(e)	<p>Explain <u>two</u> ways of reducing the fat content of a product.</p> <p>2 x 1 mark</p> <p>Change a high fat ingredient for a lower fat one</p> <ul style="list-style-type: none"> • Cream to yoghurt • Red meat to white meat • Grill / steam instead of frying • Less fat in cake/pastry • Dry fry in casseroles/stews 	[2]

Section B		
Question Number	Answer	Max Mark
4(f)	<p>The following are examples of recent newspaper headlines. Explain what effect publicity has on manufacturers of ready made meals.</p> <p>4x 1 marks 1 mark for each briefly explained point. – maximum 2 marks 2 marks for detailed explained point – maximum 4 marks</p> <ul style="list-style-type: none"> • Improved labelling – clearer. • Production of 'healthier' options • Reduction of fat and salt in traditional foods e.g. baked beans with no added salt and sugar. • Supermarkets responding to government initiatives – targeting areas such as bread, breakfast cereals and ready meals (Sainsbury's) • Manufacturers are regularly reviewing sodium content of foods and reducing it where possible. • Traffic light system to be introduced on some foods in relation to the fat content. Consumers are therefore able to make informed choices quickly. • Actively marketing reduced fat / salt foods in a positive way. 	[4]
5(a)	<p>Food manufacturers carry out research so they can generate new ideas. State <u>one</u> research method a manufacturer may use when generating new ideas.</p> <p>Surveys / questionnaires / asking people Looking at existing products Looking in recipe books Use of internet</p>	[1]
5(b)	<p>State <u>one</u> way the results of research could be recorded.</p> <p>Graph – pie chart / bar graph Written report Table of results In a PowerPoint presentation</p>	[1]

Section B												
Question Number	Answer	Max Mark										
5(c)	<p>Young children often refuse to eat fruit.</p> <p>A food manufacturer wants to develop a new fruit dessert which will appeal to children</p> <p>The design specification for the fruit dessert product is:</p> <ul style="list-style-type: none">• To contain fruits• To contain calcium• To contain a variety of textures• To be attractive to children <p>On the diagram on the next page draw and label a new fruit dessert product.</p> <p>In the boxes provided describe your ideas for each point.</p> <p>4 x 1 mark</p> <table><tr><th>Specification point</th><th></th></tr><tr><td>To contain fruits</td><td>Diagram or notes clearly label / show two different fruits which are suitable for inclusion in a cold dessert. (do not credit fruits on top of the dessert is they would go brown during storage e.g. raw apple</td></tr><tr><td>To contain calcium</td><td>Clearly shows the ingredients or where the ingredients are that contain calcium e.g. Milk in custard Use of dairy products such as yoghurt, crème fraiche</td></tr><tr><td>To contain a variety of textures</td><td>Must state the ingredients which have textures e.g. Creamy – cream, custard, yoghurt Smooth – cream yoghurt, custard Chewy – sponge, named fruits Crisp - biscuits, hard fruits Soft - sponge, soft fruits</td></tr><tr><td>To be attractive to children</td><td>Explanation of how its been made attractive to children How its been decorated on top e.g. use of ingredients to improve presentation Reference to foods which children like Use of layers– check carefully that the ingredients work as layers</td></tr></table>	Specification point		To contain fruits	Diagram or notes clearly label / show two different fruits which are suitable for inclusion in a cold dessert. (do not credit fruits on top of the dessert is they would go brown during storage e.g. raw apple	To contain calcium	Clearly shows the ingredients or where the ingredients are that contain calcium e.g. Milk in custard Use of dairy products such as yoghurt, crème fraiche	To contain a variety of textures	Must state the ingredients which have textures e.g. Creamy – cream, custard, yoghurt Smooth – cream yoghurt, custard Chewy – sponge, named fruits Crisp - biscuits, hard fruits Soft - sponge, soft fruits	To be attractive to children	Explanation of how its been made attractive to children How its been decorated on top e.g. use of ingredients to improve presentation Reference to foods which children like Use of layers– check carefully that the ingredients work as layers	
Specification point												
To contain fruits	Diagram or notes clearly label / show two different fruits which are suitable for inclusion in a cold dessert. (do not credit fruits on top of the dessert is they would go brown during storage e.g. raw apple											
To contain calcium	Clearly shows the ingredients or where the ingredients are that contain calcium e.g. Milk in custard Use of dairy products such as yoghurt, crème fraiche											
To contain a variety of textures	Must state the ingredients which have textures e.g. Creamy – cream, custard, yoghurt Smooth – cream yoghurt, custard Chewy – sponge, named fruits Crisp - biscuits, hard fruits Soft - sponge, soft fruits											
To be attractive to children	Explanation of how its been made attractive to children How its been decorated on top e.g. use of ingredients to improve presentation Reference to foods which children like Use of layers– check carefully that the ingredients work as layers											
		[4]										

Section B		
Question Number	Answer	Max Mark
5(d)	<p>Additives are widely used in food products.</p> <p>Discuss the implications to the manufacturer and consumer of using additives in food products.</p> <p>6 x 1 marks 3 x 1 mark for statements 2 x 1 mark for the explanations 1 mark for good example</p> <p>Statements</p> <ul style="list-style-type: none"> • Help to keep food safe for longer by protecting it against the growth of micro organisms. • Extending shelf life is useful to consumers as products keep longer and therefore don't have to be purchased so often. Can be purchased in larger quantities, which are often cheaper. Manufacturer can sell at a more competitive price. • Consumers can shop less often. • Food is available out of season therefore it increases the consumer's choice of foods. • Manufacturers can safely transport foods from other countries / greater distances. • Can improve the flavour of foods – e.g. use of vanilla. • Can improve the colour of foods – e.g. stops foods separating (synerisis) – sauces/low fat products/custards/pie fillings. • Can improve the nutritional value of the food e.g. fortification aiding in the processing and manufacture. • Some additives linked to hyperactivity in children – school difficulties / usual colourings • Allergic reactions – states type of reactions / ingredients not always clear. • Want to eat natural foods – linked to healthy diet. • Some additives do not serve any nutritional purpose. <p>To award 6 marks candidates must consider both the manufacturer and the consumer.</p>	[6]
Paper Total		[60]

Assessment Objectives Grid (includes QWC)

Question	AO1	AO2	AO3	AO4	Total
Totals					

SPECIMEN